

REVIEW



Vaccine hesitancy within the Muslim community: Islamic faith and public health perspectives

Ahmed R. Alsuwaidi^{a*}, Hamza Abed Al-Karim Hammad^{b*}, Iffat Elbarazi^c, and Mohamud Sheek-Hussein^{c,d,e}

^aDepartment of Pediatrics, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, UAE; ^bDepartment of Sharia and Islamic Studies, College of Law, United Arab Emirates University, Al Ain, UAE; ^cInstitute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, UAE; ^dSchool of Public Health, Loma Linda University, Loma Linda, CA, USA; ^eDepartment of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, MA, USA

ABSTRACT

Vaccine hesitancy is a growing public health concern that has fueled the resurgence of vaccine-preventable diseases in several Muslim-majority countries. Although multiple factors are associated with vaccine hesitancy, certain religious deliberations are significant in determining individuals' vaccine-related decisions and attitudes. In this review article, we summarize the literature on religious factors linked to vaccine hesitancy among Muslims, thoroughly discuss the Islamic law (sharia) viewpoint on vaccination and offer recommendations to address vaccine hesitancy in Muslim communities. Halal content/labeling and the influence of religious leaders were identified as major determinants of vaccination choices among Muslims. The core concepts of sharia, such as "preservation of life," "necessities permit prohibitions," and "empowering social responsibility for the greater public benefit" promote vaccination. Engaging religious leaders in immunization programs is crucial to enhance the uptake of vaccines among Muslims.

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Introduction

Vaccine hesitancy and vaccine refusal are increasingly recognized as global health concerns that may upend the successes of vaccination programs against infectious diseases.¹ Their etiology is complex and relates to a broad range of context-specific factors that change depending on location, time, and vaccine. The leading factors contributing to vaccine hesitancy include socio-cultural differences, unfamiliarity with vaccine-preventable diseases, lack of understanding of the coincident and insignificant adverse effects of vaccines, lack of trust in public health messages, and media misinformation.²

Remarkably, religious beliefs have been cited as major drivers of vaccine hesitancy and refusal. Religious factors are distinct from other factors in that they are generally linked to core beliefs, which makes it extremely difficult to convince individuals to change their views on immunization, and are mostly linked to a complete refusal of vaccines rather than vaccine hesitancy.³

Although most major religions, including Islam, Judaism, Christianity, and Hinduism, do not oppose the idea of vaccination, certain religious considerations, or related socio-cultural reasons play significant roles in shaping vaccine attitudes, beliefs, and decisions.^{4,5} The most apparent religious considerations that oppose immunization are linked to violation of prohibitions against taking life, violation of dietary laws (e.g., non-halal-based vaccine), or interference with the natural order by not letting events take their course.⁶

Notably, religious affiliation has been linked to lower vaccination coverage, especially in more conservative Muslim

communities.⁷ Sporadic outbreaks of vaccine-preventable diseases such as polio, diphtheria, measles, tetanus, and pertussis have recently occurred in Muslim-majority countries, including Afghanistan, Malaysia, and Pakistan, because of Muslim parents' refusal to immunize their children.⁸ Understanding the religious factors underpinning vaccine hesitancy among Muslims is crucial for public health authorities to implement appropriate strategies when introducing new vaccines or addressing low vaccine uptake.

In this review, we summarize the literature on vaccine hesitancy among Muslims and their impact on public health. Thereafter, we provide an in-depth discussion of Islamic law (sharia) perspectives on vaccination, and finally, suggest public health interventions that may mitigate vaccine hesitancy and its consequences in Muslim communities.

Vaccine hesitancy in Muslim communities

There are numerous studies on vaccine hesitancy and under-vaccination in Muslim communities. In Indonesia – the country with the largest Muslim population – the coverage of childhood vaccines is suboptimal, which resulted in a massive diphtheria outbreak in 2017.⁹ A qualitative study exploring Indonesian parents' reasons for incomplete childhood immunization revealed three inter-connected themes of religious belief barriers, safety concerns, and issues of trust and misinformation.¹⁰ Another study explored the views of religious and community leaders regarding the rotavirus vaccine where vaccine acceptance is complicated because of the use of porcine trypsin during

the manufacturing process, raising concern about the rotavirus vaccine being non-permissible (non-halal). Although participating religious leaders recognized that rotavirus diarrhea can be severe and vaccination is advisable, they believed that the halal label was required for community acceptance and maintenance of trust.¹¹ In 2018, a fatwa (i.e., a formal ruling by a religious authority) issued by Indonesian Islamic clerics declared measles and rubella vaccine forbidden (Haram) under sharia because pig components were used to manufacture it. Consequently, immunization rates have significantly dropped, reaching as low as 8% in Aceh – a province ruled by sharia.¹²

Pakistan – the country with the second-largest Muslim population worldwide – has the third-highest burden of child mortality and ranks third globally for the most under-vaccinated children.¹³ In a study exploring reasons for non-vaccination in pediatric patients visiting tertiary care centers, the most common reasons for non-vaccination were the lack of knowledge and religious taboos. The authors of this study stated that they encountered disagreement against vaccination among most religious leaders in the country with statements such as, “The imam (religious leader) has forbidden the use of vaccines as they contain porcine components” and “Vaccination is a conspiracy of the Zionists. Vaccinating our children will inevitably make them sterile.”¹⁴ Similar “anti-vaccination” sentiments have rapidly spread in the Pakistani Muslim community, which claims that vaccine is a Western conspiracy to eradicate Muslims. This has led to increased attacks on immunization officers; three members of a polio vaccination team, including two women, were shot dead in Karachi in January 2014.¹⁵ Conspiracy theories resurfaced during the COVID-19 pandemic, and were widespread on social media, reaching millions of Pakistanis.¹⁶

In Malaysia, which is a multi-religious country, Islam is the official religion. In 2018, a resurgence of diphtheria was witnessed in four cases, including the death of a two-year-old unvaccinated child. The reluctance of a few parents to comply with the vaccination policy resulted in creating pockets of unvaccinated children in a country that had achieved acceptable immunization coverage rates.¹⁷ Malaysian parents’ reasons for refusal of childhood vaccinations included personal health beliefs, such as lack of confidence in modern medicine and healthcare personnel, pharmaceutical conspiracy to sell medicines, preference for a natural approach to health, and religious beliefs. One parent stated that: “if God created humans to withstand diseases by giving them an immune system, then vaccines were unnecessary.”¹⁸ Religious health fatalism – the belief that health outcomes are inevitable and/or determined by God – has been shown to influence health behaviors such as participation in health promotion programs and health decision-making.¹⁹ One study revealed that higher religious health fatalism belief was significantly associated with lower intent to receive the COVID-19 vaccination in the univariable analysis, but not in the multivariate analysis, highlighting some degree of influence of religious fatalism on the intention to take the vaccine.²⁰

In Sudan – a Muslim-majority country in Africa that has witnessed low measles vaccine coverage and frequent measles

outbreaks – immunization officers and vaccine providers were interviewed to better understand measles vaccine hesitancy in Khartoum state. The study participants indicated “anti-vaccination” sentiments originating from religious groups, especially the Ansar Al-Sunna group, who often refuse all vaccines. Additionally, a fatwa about prohibiting the vaccination of children was issued in 2007 by the leader of Sudan’s Muslim Brotherhood – a religious group – claiming that vaccines are a conspiracy of Jews and Freemasons.²¹

Vaccine hesitancy is also prevalent in many Arab countries in the Middle East and North Africa region, where Islam is the predominant religion.^{22,23} A study from Saudi Arabia that evaluated factors related to COVID-19 vaccine hesitancy revealed that vaccine barrier scores were significantly higher among study participants with lower educational and income levels. The influence of religion on vaccine-use decisions was reported by only 11.3% of the participants.²⁴

In the United States, the Institute for Social Policy and Understanding conducted a survey in March 2021 to explore COVID-19 vaccine uptake and hesitancy among American Muslims and the general American public. American Muslims had a higher intent to be vaccinated against COVID-19 compared to the general American public (35% vs. 32%). However, the percentage of Muslims who expressed some form of vaccine hesitancy was higher compared to the general American public. One cited reason for vaccine hesitancy among American Muslims was institutional religion-based discrimination faced by Muslims within the healthcare system.²⁵

In Australia, a qualitative study explored the human papilloma virus (HPV) vaccine knowledge, attitudes, and practices of parents from Arabic Muslim backgrounds. The study revealed several themes, including the role of parents’ religious beliefs in forming attitudes toward HPV vaccination. A few parents were shocked to learn that HPV vaccine protects against sexually transmitted infections, considered this in conflict with their religious beliefs, and declined the HPV vaccine for their children.²⁶

In the UK – another Muslim-minority country – fasting during Ramadan, and COVID-19 vaccine hesitancy were causes of concern. People from certain ethnic minority backgrounds, such as Muslims from Bangladesh and Pakistan, were thought to be more reluctant toward COVID-19 vaccination – they did not want to invalidate their fast by taking vaccine during the fasting hours.²⁷ Likewise, in Guinea, which is a Muslim-majority country, a study disclosed that 46% of Muslims and 80% of religious leaders viewed vaccination during Ramadan as a forbidden act, citing such reasons as, nothing should enter or leave the body during fasting and vaccine side-effects could lead to breaking their fast.²⁸ A statement that COVID-19 vaccine does not invalidate the fasting during Ramadan was issued by the President of the Two Holy Mosques in Saudi Arabia in March 2021; similar statements have been issued by other authorities, including the British Islamic Medical Association. This emphasizes the key role of religious and medical/health leaders in fostering the acceptance of their communities toward vaccination.^{27,29,30}

Sharia (Islamic law) interpretation of concepts pertaining to vaccination

Vaccination in the context of destiny and fate

Vaccination pertains to a significant Islamic principle: “seeking treatment via medication.” An explicit question was posed to the Prophet Mohammad, peace be upon him (PBUH): “Should we take medication?” The Prophet replied: “Take medication, God Almighty did not create a disease without appointing a medication for it, except for one disease: aging.”³¹ Moreover, the Prophet (PBUH) urged doctors to research and conduct scientific studies to identify cures for diseases, when he said: “For every disease there is a cure, so if a cure is found, the afflicted by the disease will be cured, God Willing.”³²

Another example illustrates how the Prophet (PBUH) commended seeking treatment instead of waiting for recovery without medication when a group of people – among them, a sick man – visited Medina: the second-holiest place in Islam. The Prophet (PBUH) visited the man and urged him to use the black seed – *Nigella sativa*; a common treatment at that time – explaining the treatment: crushing five or seven seeds and dropping their oil into the nostrils.³³

Islamic scholars and researchers believe that the Prophet (PBUH) set the issue of taking medicine and seeking treatment in its proper sense when he was asked whether taking medicine contradicts or reverses the destiny and fate of God Almighty; he responded that seeking treatment is actually from God’s fate and destiny.³⁴ It can be concluded from the previous hadith (i.e., collected traditions of the Prophet Muhammad (PBUH), based on his sayings and actions) that fate and destiny can be addressed by the same means of God’s fate and destiny. Therefore, it is necessary to differentiate between dependence and reliance. Dependence is to rely solely on God without pursuing the means, whereas reliance on God implies having strong faith in the adoption and pursuit of material means.³⁵

Based on the above regarding the general rule of seeking treatment through medication, Islamic scholars consider vaccination a religious obligation. In 1992, the International Islamic Fiqh Academy issued a statement indicating that among the objectives of sharia is the preservation of life. Accordingly, when not seeking medical treatment may lead to infection or death to others, then seeking medical treatment may be considered a religious obligation.³⁶ Similarly, in 2016, the Fatwa Committee of Perlis in Malaysia issued a statement indicating that vaccination is an Islamic obligation. The statement indicates as follows:

Parents have the duty to protect their children from any form of harm. To date, vaccination of children has been proven to be the most effective way to protect children from infectious diseases such as measles, polio, influenza, meningococcal infection, and diarrhea. It is considered a religious obligation (wajib) for parents or guardians to protect their children against these illnesses by vaccinating them.³⁷

It is noteworthy that the Prophet (PBUH) emphasized the principle of social responsibility by preventing and guarding against the spread of epidemics. For instance, once a delegation – including a leper – from an Arab tribe visited for converting to Islam. The Prophet (PBUH) accepted his conversion to Islam but forbade his entry into Medina.³²

Scholars believe that this act affirms the Prophet’s (PBUH) sense of social responsibility – being mindful of the spread of epidemics and taking precautions to ensure prevention. Additionally, it indicates the necessity of quarantine for the infected: “If you hear of an outbreak of plague in a land, do not enter it; but if the plague breaks out in a place while you are in it, do not leave that place.”³³

Discussing the viewpoint forbidding vaccination for children and adults

Few fatwas by religious scholars have been observed in Pakistan, Afghanistan, and Malaysia, prohibiting vaccinations for adults and children. These viewpoints are based on the following statements:

- The constituents of the vaccine contained forbidden and impure substances derived from pigs.
- The rate of disease prevention after vaccination is not 100% to permit use of vaccine prepared with pig derivatives.
- The presence of some harm (adverse events) resulting from vaccination, such as fever.^{38–40}

These viewpoints can be refuted through the following arguments:

First, if the substances that constitute the vaccine are permissible according to sharia, that is, no forbidden constituents such as parts of the pig or intoxicating substances are included, then it is permissible to use the vaccine in accordance with Islamic jurisprudence. The basic principle is that things are permissible until there is evidence of prohibition, and the implication of this rule is as follows: everything that God Almighty created is permissible for man. As for prohibited things, they have been disclosed with special evidence. If there is no evidence for the prohibition of a specific substance, animal, or matter, then it is permissible.^{41,42}

Second, if we assume the inclusion of impure or prohibited substances in the components of the vaccine, such as pig derivatives, researchers believe that when referring to the Qura’nic text, we find that it is permissible to eat or take forbidden things in the absence of what is permissible, and with the utmost necessity or need to eat or take forbidden things with no availability of a permissible alternative. God Almighty says in Surat Al-An’am:

I do not find in what has been revealed to me anything forbidden to eat except carrion, running blood, swine – which is impure – or a sinful offering in the name of any other than Allah. But if someone is compelled by necessity – neither driven by desire nor exceeding immediate need – then surely your Lord is All-Forgiving, Most Merciful. (Quran 6, Verse 145)

The Qur’anic text emphasizes that necessities permit prohibitions. Necessity is considered harmful, and it is a state of danger or extreme hardship where a person fears for himself/herself or others from death or a severe disease. In this situation, a person has two options: taking the forbidden or unclean; or suffer death or a severe illness. Here, it is permissible to take or consume the forbidden, provided that there is

no permissible alternative for it, in addition to the fact that the Qur'anic text indicates the prohibition of killing oneself, in Surat An-Nisa: "O believers! Do not devour one another's wealth illegally, but rather trade by mutual consent. And do not kill 'each other or' yourselves. Surely Allah is ever Merciful to you" (Quran 4, verse 29). Thus, not taking the vaccine leads to death by killing of the self, which is forbidden by God Almighty.^{38–40,43}

Furthermore, researchers consider that if we assume the presence of some pig derivatives as raw materials in vaccines, these substances have completely eliminated their symptoms because of their consumption and incorporation into a new composition comprising various substances. Accordingly, researchers see the possibility of employing the *istihala* rule in Islamic jurisprudence. It refers to the transformation into another substance different from it by name, characteristics, and qualities.⁴⁴ Forbidden or impure substances when added to food or medicine are transformed into substances permissible under Islamic law by way of *istihala* – provided that they are complete *istihala*, that is, a complete chemical reaction occurs. For example, converting oils and fats into soap, and decomposing the substance into its various components, such as dissolving oils and fats into fatty acids and glycerin. Accordingly, researchers believe that vaccines fit the description of the complete chemical reaction. Impure materials used in vaccines are permissible by means of *istihala*.^{38,39,45} To reiterate this conclusion, the World Health Organization Regional Office for the Eastern Mediterranean issued a letter on the collective opinion of Islamic religious scholars, stating: "The gelatin formed as a result of the transformation of the bones, skin, and tendons of a judicially impure animal is pure, and it is judicially permissible to eat."⁴⁶

Third, given that vaccines are not 100% effective in preventing disease, it is not deemed necessary to take the vaccine. Scholars believe that the provisions in sharia in terms of analysis and prohibition are based on the majority; thus, if benefits prevail, the ruling is permissible, and when harm prevails, the rule forbids. Additionally, scholars inferred that by deduction from the Almighty saying about wine and gambling, in Surat Al-Baqarah: "They ask you 'O Prophet' about intoxicants and gambling. Say, there is great evil in both, as well as some benefit for people – but the evil outweighs the benefit" (Quran 2, Verse 219). Moreover, it is possible to rely on the rule based on the prevailing general without the rare abnormal, and what is implied here is mostly what is abundant. Islamic jurisprudence deals with the frequent, not the rare.^{47–49} Accordingly, when vaccines are most likely to limit the harmful effects of infectious diseases and facilitate swift recovery, then the legal ruling is based on the majority. Therefore, it can be inferred that it is permissible to take the vaccine.

The fourth pertains to the existence of harm from vaccination, such as fever and certain temporary adverse events. Researchers opine that these minor harms do not impact the ruling on vaccination as the greater harm is prevented by the lesser harm, that is, vaccination prevents disease. However, vaccine refusal will result in the greatest harm, that is, an epidemic, which may spread disease and may cause deaths in others.^{38,39,48,50–53}

The issue of the state compelling children and adults to be vaccinated

Several researchers concur that the jurisprudential heritage has dealt with this issue, and many Islamic scholars – for example, Muhammad bin Ahmed bin Rushd, who died in 1058 AD, Marei bin Yusef Al-Karmi, who died in 1624 AD, and Mansour Younis Al-Bahouti who died in 1641 AD – gave examples of the state compelling its people to a medical order that achieves the greatest public benefit; this is stated in the case of lepers, where the state imposed a quarantine on them to prevent epidemics.^{54–56}

As discussed above, one of the purposes of Islamic law is self-preservation. Accordingly, researchers trust that every human action or behavior includes the preservation of humanity. It falls under the interest desired by Islamic law that every human action or behavior leading to the destruction of life is harmful and must be averted. Islamic law has placed responsibility for protecting the interests of people with the ruler or the state. The Prophet (PBUH) said: "Every one of you is a shepherd and is responsible for his flock, so the imam is a shepherd and he is responsible for his flock, and the man is the guardian of his family and he is responsible for them."³³ It is inferred from the hadith that the state is responsible for preserving the higher interests of the people, and to perform its duties, the Qur'anic text has made it obligatory to obey the orders of the ruler and the state. The Almighty said in Surat An-Nisa: "O believers! Obey Allah and obey the Messenger and those in authority among you" (Quran 4, Verse 59).

Similarly, vaccinating children against contagious diseases is the duty of the child's guardian as long as they are able to do so and as long as the results of vaccination are certain. Duties of the guardian include protecting the child from harm. If a guardian fails to prevent harm and disease to a child or to those for whom he/she is responsible, then, in accordance with Islamic jurisprudential, the harm must be removed. Thus, according to Islamic Jurisprudence, actions of the guardian are based on the interests of the child, and vaccination, therefore, is obligatory to prevent greater harm and epidemics. Similarly, if it becomes a matter of self-preservation, then the ruler, through the ministry of health, is obliged to make vaccination against communicable diseases mandatory to protect the society from actual or expected damage.^{39,41,52,57}

Additionally, the International Islamic Fiqh Academy requires the patient's consent for treatment if they are fully qualified (i.e., of a sound mind and competent). In cases where patients lack these competencies (e.g., minor children), the guardian's permission is sought instead. This consent is limited to what achieves the interests of those under guardianship and keeps them from harm. Therefore, if permission results in clear harm to guardianship, then the right is transferred to other guardians, and then to the state. The state, represented by the ministry of health, is obliged to compel its constituency to take medication in certain cases, such as epidemics.⁵⁸

Public health interventions to overcome vaccine hesitancy

Healthcare providers and public health officials in Muslim communities are at the frontline of curbing the spread of vaccine hesitancy. While doing so, it is crucial to highlight – as discussed above – that the core concepts of Islam favor vaccination and most instances of vaccine refusal are based on traditional or social, rather than true religious principles.⁶ For example, different interpretations of Islamic laws by religious scholars and leaders create confusion among the general public due to the lack of consensus. Additionally, there are other significant factors for vaccine hesitancy and under-vaccination among Muslims, such as misinformation, vaccine safety concerns, trust in the government particularly in countries where Muslim population is a minority or socio-economically backward or are in politically conflict area, and a low level of formal education. Therefore, identifying and targeting the specific reasons for vaccine hesitancy and refusal are the initial steps in addressing this challenge.

There is no single strategy for addressing vaccine hesitancy in any population, which necessitates a multi-dimensional approach involving community members, families, and individuals. The World Health Organization Strategic Advisory Group of Experts on Immunization (SAGE) recommends multi-component interventions including social mobilization with the involvement of religious and community leaders, raising knowledge and awareness of vaccines and vaccine-preventable diseases, and communication tools-based training for healthcare workers. These interventions must be targeted toward unvaccinated or under-vaccinated populations and carefully tailored to their reasons for hesitancy and the specific context.⁵⁹ Following implementation, public health authorities must conduct rigorous impact evaluations of the interventions on vaccine uptake.⁶⁰

In the context of Muslim communities, collaborations among political, public health, and religious leaders is key to resolving immunization objections, enabling continuation of immunization programs, and achieving vaccination targets.⁶ Messages from religious leaders were more effective in forming a favorable public opinion toward COVID-19 vaccine compared to messages from political or medical leaders.⁶¹ The timely statement issued by the President of the Two Holy Mosques in Saudi Arabia about the permissibility of COVID-19 vaccine while fasting during Ramadan is an appropriate example.²⁹ Moreover, in Muslims communities that have witnessed anti-Western sentiments, engaging religious community leaders in the immunization programs with “Inclusive ownership” has been suggested as a strategy to ameliorate vaccine refusal and enhance vaccine uptake.⁶² This strategy was found useful in the Mewat district of Haryana in India where poor vaccine coverage has been a long-standing issue. Trusted religious leaders were engaged in co-designing communication interventions that involved broadcasting videos to disseminate advice and personal stories regarding vaccines. This intervention provided a platform for vaccine-positive messaging among community members and increased vaccine confidence.⁶³

Similarly, adopting culturally relevant information and trusted messengers to educate people and dispel false information was a successful strategy that helped to reduce COVID-19 vaccine hesitancy in the Somali Muslim community in Minnesota which has the largest population of Somali Muslims in North America. Information campaigns were organized with the help of interpreters to translate medical information into the different Somali dialects. Trusted figures like Imams were using Friday sermons to correct misconceptions around vaccine safety. These measures boosted vaccine confidence and resulted in significant increase in COVID-19 vaccine uptake in the Somali Muslims in Minnesota.⁶⁴

As discussed above, halal certification and labeling for vaccines have been highlighted as requirements for community acceptance and maintenance of trust in vaccines. Fatwa councils in most Muslim communities have used sharia law approaches (e.g., the istihala principle) to grant halal certificates for COVID-19 vaccines and other vaccines. Additionally, it has been suggested that the use of animal-component-free products in vaccine manufacturing might mitigate vaccine hesitancy in Muslims communities.⁶⁵

Conclusion

Vaccine hesitancy is a global health problem that adversely affects several Muslim communities as well as many other populations. It spreads among Muslims and generates significant immunization gaps and outbreaks of vaccine-preventable diseases. In this review article, we demonstrate in detail that the core Islamic teachings promote vaccination. However, misinterpretation by some religious community leaders has negatively influenced Muslims’ attitudes and decisions regarding vaccination. Understanding the core Islamic beliefs pertaining to vaccination is critical for public health officials when dealing with issues of vaccine hesitancy and vaccine refusal among Muslims. Moreover, religious leaders must be engaged in decision-making regarding immunization programs, as their influence is effective in mitigating vaccine hesitancy and improving the community uptake of vaccinations.

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ORCID

Ahmed R. Alsuwaidi  <http://orcid.org/0000-0002-1187-522X>

Authors’ contributions

ARA conceptualized the study, supervised the project, retrieved the literature on vaccine hesitancy in Muslim communities and public health strategies that address vaccine hesitancy, and drafted the related sections. HAAH retrieved the literature on sharia (Islamic law) interpretation of

concepts pertaining to vaccination and drafted the related section. IE and MSH contributed to the literature review on vaccine hesitancy in Muslim communities and helped draft the manuscript. All the authors reviewed and edited the final version of the manuscript and approved it for publication.

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